DIGITAL ARCHIVES – FUNCTIONAL OVERVIEW

1. INTRODUCTION

1.1 Definition of Terms

- *Digital Archives* — The entirety of the technical infrastructure, standards, policies, and procedures for managing, preserving, and providing access to permanent digital objects and their associated metadata.
- *Digital Repository* — That component of a digital archives consisting of physical storage media and associated management software.
- *Clients* — Those Georgia government agencies that transfer permanent digital objects to the Digital Archives.
- *Users* — Staff of government agencies, or the general public who access the records and descriptive metadata about the records in the Digital Archives.

1.2 Digital Archives Model

This functional overview document provides a brief outline of the major operational functions of the Digital Archives (DA).[1] The DA will become the primary repository for the permanent digital records of Georgia government.[2] Successful implementation of the DA model will allow the Georgia Archives to manage, preserve, and provide online access to permanent digital records of state government.

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[1] The basic terms and concepts used in the DA model are largely drawn from the Consultative Committee for Space Data Systems' Reference Model for an Open Archival Information System (OAIS). See Appendix A for more information.

[2] For a functional and organizational overview of current operations at the Georgia Archives, see Appendix B.

1.2 Major Operational Functions

Included below is a figure representing the five major operational functions of the Digital Archives. Section 2 contains detailed descriptions of the basic sub-functions involved in the execution of the five operational functions.

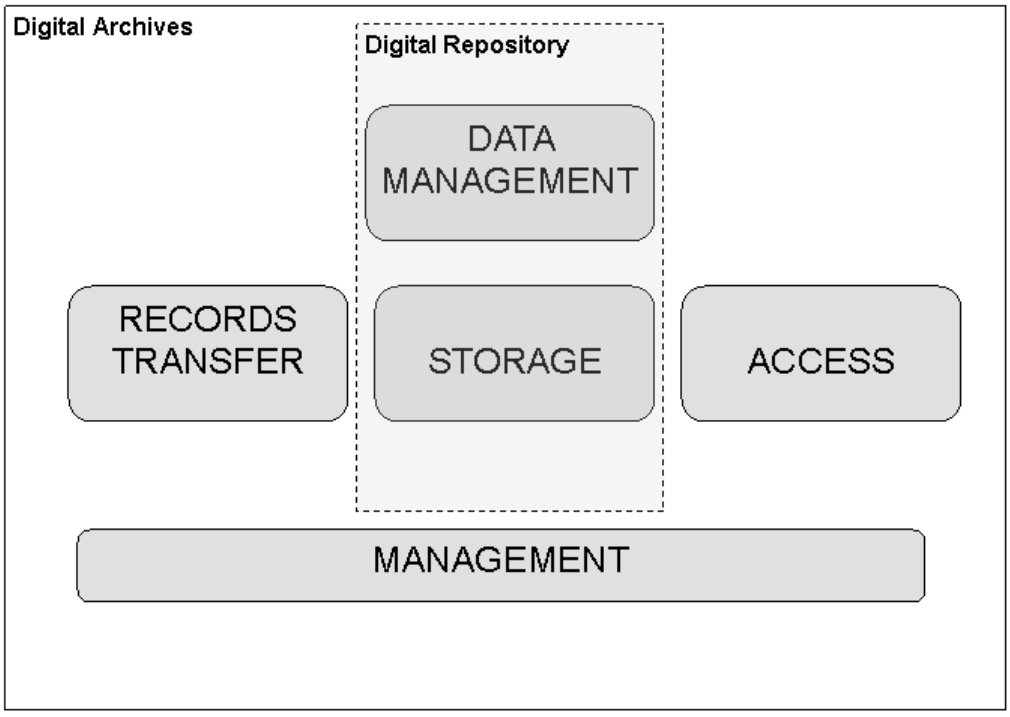

Figure 1

1.2.1 Digital Archives

The Digital Archives includes all five operational functions. Digital Archives refers to the system as a whole, including technical infrastructure and processes for managing and providing access to permanent digital objects and their associated metadata.

1.2.2 Digital Repository

Digital Repository includes the Storage and Data Management functions. Digital Repository refers to the actual server where digital objects are stored and the metadata associated with those objects is captured and maintained.

1.2.3 Operational Functions

The Digital Archives specifies five major operational functions:

- *Records Transfer* — The process of ingesting, critically examining, and accessioning digital objects transferred by government agencies.
- *Data Management* — The process of identifying and describing digital objects, including the creation of new metadata, as well as maintenance and management of existing metadata.
- *Storage* — Preserving records over extended periods of time; includes issues of media management, security, and access provisioning.
- *Management* — The process of managing the overall operation of the archive system, including the management of the system hardware and software.
- *Access* — Managing the retrieval and viewing of records, including browsing, searching, ordering, and viewing records and their descriptive metadata.

1.3 Digital Archives Objects

The digital object is the primary unit of the Digital Archives. Digital objects may be received into the repository by file transfer protocol (FTP), exported from one records management application (RMA) store to another, or through transfer of physical media such as tape or optical disc.

The place of the digital object in the overall scheme of archival organization is detailed in the following figure:

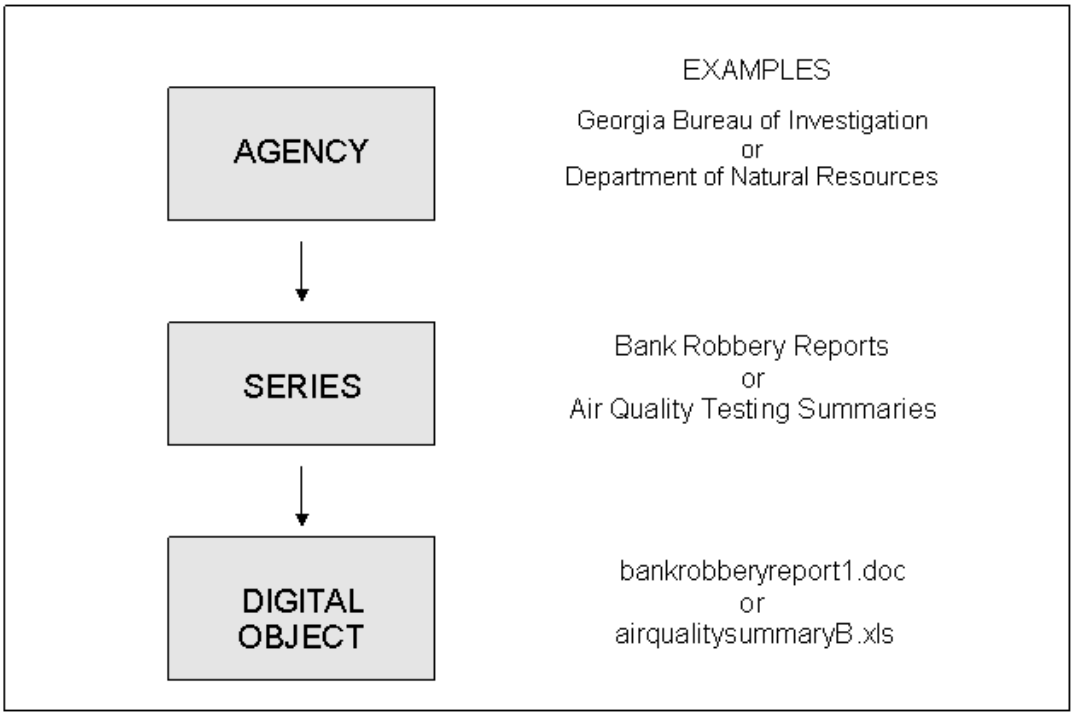

Figure 2

It should be noted that the figure above is represented as a straight line relationship solely for the purposes of example rather than as the sole means of relationship.

1.4 Digital Archives Metadata

The Digital Archives will capture and manage a wide range of metadata about digital objects in order to ensure (and document) their ongoing management and preservation. Below is a description of the three different types of metadata that are managed by the Digital Archive.

- *Record Metadata* — This is metadata captured about individual electronic records (digital objects). It includes elements such as record identifier, title and author. This metadata is captured by the creating agency and transferred as part of the Records Transfer function. The minimum metadata to be captured for permanent records is specified in the Metadata Standard.
- *Administrative Metadata* — This is added metadata that is used by the Georgia Archives to manage an object's location, its access control and disposal status.
- *Descriptive Metadata* — This is added metadata that is used to describe the content of and relationships between individual digital objects.

2. OPERATIONAL FUNCTIONS

Operational functions are the major activities involved in managing, processing, storing, and providing access to digital records in the Digital Archives.

2.1 RECORDS TRANSFER FUNCTIONS

2.1.1 Receiving Digital Objects
This function allows the controlled receipt of digital objects. The transfer process is automated as far as possible and the digital objects are accessioned as part of the transfer process. Digital objects are received electronically or loaded from physical media in accordance with approved policy and procedure.

2.1.2 Assuring Quality of Digital Objects
This function allows for the testing of the received digital objects. Objects are first tested for viruses, then tested to ensure the contents of the batch are complete and uncorrupted. Finally, the objects are tested to ensure they are not duplicates of already existing digital objects.

2.1.3 Processing Digital Objects
Upon reception, digital objects will be held in a separate quarantine area where they can be checked for viruses and file corruption. The processing function will allow for a secure environment and object examination functionality.

2.1.4 Importing Digital Objects
This function imports the digital objects into the Digital Repository and automatically extracts the record metadata from the object. During this process, the unique identifier of the digital object is captured. The digital objects will also be re-encapsulated with administrative metadata and descriptive metadata created by staff of the Georgia Archives.

2.1.5 Certifying Custody of Digital Objects
This function acknowledges the transfer of custody of the digital objects from the client to the Digital Archives. When the digital objects have been fully accessioned, the agency that transferred the objects must be notified of the successful quality check and the successful accession. The agency is then free to delete the original copy of the digital objects held in the agency.

2.2 DATA MANAGEMENT FUNCTIONS

2.2.1 Creating Metadata
This function receives metadata about digital objects (record metadata, administrative metadata, and descriptive metadata) and manages it. The

metadata is regularly updated with metadata following each transfer of digital objects. The metadata can be generated and regenerated from the digital objects stored in the digital repository.

2.2.2 Managing Metadata
This function enables the management of metadata describing objects in the system. This ensures that metadata elements and the relationships between the elements are maintained.

2.2.3 Retrieving Data
This function retrieves data for the Access function, in response to a request by a user.

2.2.4 Maintaining Data Integrity
This function ensures that the integrity of the data is maintained. This includes checking that everything that is meant to be in the repository is still there, that the digital objects have not been tampered with and that the integrity of the objects is maintained through the periodic checking and verification of digital signatures.

2.2.5 Allowing for Operations
This function allows operational activities to be carried out on metadata. These activities include modifying metadata and re-encapsulating the digital objects with modified metadata.

2.3 STORAGE FUNCTIONS

2.3.1 Storing Digital Objects
This function provides for the management of the digital objects within the storage system, including managing the location of the digital objects within the storage system.

2.3.2 Managing Storage Media
This function provides for the maintenance of the storage media. Media will be periodically replaced, which requires appropriate migration strategies and refreshing of digital objects.

2.4 MANAGEMENT FUNCTIONS

2.4.1 Administering the System
This function includes provision for maintenance and ongoing management of Digital Archives system, as well as its component parts.

2.4.2 Providing Security
This function controls access to the physical Digital Archives system, the system components and access to the digital objects. The Digital Archives system and

its component hardware, software, and network parts must be secure from unauthorized access.

2.4.3 Ensuring Disaster Recovery
This function provides a comprehensive disaster recovery plan and relevant technical components to ensure that all digital objects are never lost from the Digital Archives and to ensure high availability of all user interfaces to the Digital Archives.

2.4.4 Auditing Digital Objects
This function provides a history of all changes to digital objects, related metadata and all other data within the Digital Archives and its component parts. The audit log can be queried by authorized users and results displayed on screen and printed as a report.

2.4.5 Producing Queries and Reports
This function enables the system administrators and system users to query the Digital Archives or its component parts, and to receive information back. The results of these queries can be displayed on screen or printed as reports.

2.5 ACCESS FUNCTIONS

2.5.1 Browsing and Searching Digital Objects
Browsing and searching capabilities must be available to staff as well as the public, with certain specific functionalities available to each designated user population.

2.5.2 Indexing Digital Objects
This function manages the generation and maintenance of indexes to ensure quick responses to search and order queries through the access interface. Indexes must be generated, of both digital object content and metadata, to support search and order functionality. The indexes will require periodic updates, and must be able to be regenerated from the digital objects stored in the digital repository.

2.5.3 Responding to Digital Object Queries
This function refers to the manner in which the system generates and delivers responses to search requests. The user should have the ability to sort the results, further narrow the search and save search results for later use. Copies of digital objects can be delivered to the desktop for the user.

2.5.4 Displaying Digital Objects
This function displays the details about individual digital objects and enables the display of their contents.

2.5.5 Ordering Digital Objects

This function refers to requests for copies of electronic objects. Appropriate costs for media and copies must be calculated and payment by credit, debit, or check allowed.

2.5.6 Registering Users

Provision will be made for user registration services, allowing a database of all authorized users to be created.

2.5.7 Managing Access

This function provides strict control of user access to digital objects and their metadata. Digital Archives users will be provided access in accordance with Georgia Archives access policies. In order to implement the policies, the Digital Archives must recognize particular users to determine their access rights.

Appendix A: Reference Model for an Open Archival Information System

The design of the Digital Archives incorporates the functional requirements of the Consultative Committee for Space Data Systems' Reference Model for an Open Archival Information System (OAIS). The functional overview does not use the specific terminology and language of the OAIS model in all cases, but rather uses language that is more common to the archival profession and relevant to Georgia Archives staff, clients and users.

OAIS addresses the functional requirements of an archive to provide permanent or long-term preservation of digital objects. Although the OAIS model was designed to manage space data it is applicable to the management and preservation of electronic records and is well accepted in the archival community.

The OAIS model specifies the following six large functions:

- *Ingest* — This provides the services and functions to accept Submission Information Packages (SIPs) from Producers (or from internal elements under Administrative control) and prepares the contents for storage and management within the archives.
- *Archival Storage* — This provides the services and functions for the storage, maintenance and retrieval of Archival Information Packages (AIPs).
- *Data Management* — This provides the services and functions for populating, maintaining and accessing both Descriptive metadata which identifies and documents archival holdings and administrative data used to manage the archives.
- *Administration* — This provides the services and functions for the overall operation of the archival system.
- *Preservation Planning* — This provides the services and functions for monitoring the environment of the OAIS and providing recommendations to ensure that the information stored in the OAIS remains accessible to the Designated User Community over the long-term.
- *Access* — This provides the services and functions that support users in determining the existence, description, location and availability of information stored in the

OAIS, and to allow users to request and receive information products.

These functions are represented in the Georgia Digital Archives model as five major operational functions (records transfer, storage, data management, access and administration) within two domains (Digital Archives and Digital Repository).

Appendix B. Organizational Structure and Functional Overview of the Georgia Archives

Introduction

The purpose of this document is to furnish background and context for the forthcoming Digital Archives at the Georgia Archives.

This document describes the current state of the Georgia Archives, including:

- Mandate and mission
- Organizational structure
- Operational functions

About the Georgia Archives

The Georgia Archives was established in 1918 by O.C.G.A. 45-13-40, which provided for an official compiler of state records within the Office of Secretary of State. As the official archives for the state of Georgia, the Georgia Archives is responsible for the effective and efficient management, preservation, and use of public records of state government.

Public records serve as documentary evidence of government actions, both past and present, and date back to the establishment of the colony of Georgia in 1732. Public records are created by the agencies of Georgia government including the executive, judicial and legislative branches, corporate authorities, health institutions, and educational institutions.

Currently, the Georgia Archives (the Archives) has acquired very few electronic records. All were brought in on physical media, i.e., CD-Rs, and all are maintained on the original media with no intervention. As the Archives plans for the acquisition and preservation of electronic records, it must develop new policies and procedures for the management and care of digital objects. As part of that process, we have documented our existing processes so that key activities are carried forward into the new system environment.

Organizational Structure

The Georgia Archives is a division of the Office of Secretary of State. The division is managed by a director, deputy director, and three assistant directors. The division is divided into three program units – Public Services, Archival Services, and Records & Information Management Services – each overseen by

an assistant director. Figure 1 provides a graphical representation of the division.

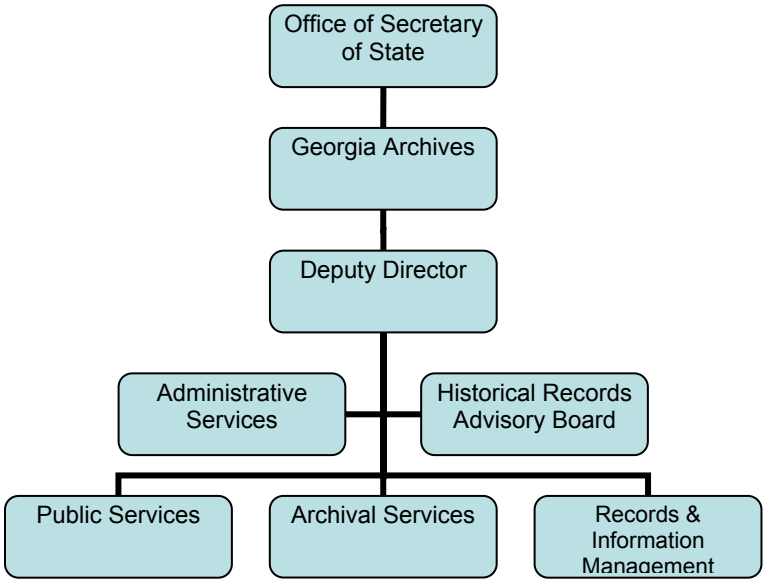

Figure 1. Organizational Structure

Each program unit manages a different aspect of the Archives mandate:

- Pubic Services. The Public Services unit is responsible for promoting the Archives and providing access to the collections. Specifically, this unit includes:
    - Volunteer and intern programs
    - Friends of the Archives
    - Educational programs,
    - Public Reference Room including the Microfilm Library and the Original Documents Reading Area (ODRA).
- Archival Services. The Archival Services unit is responsible for the physical and intellectual management of the collections in the building. This includes:
    - Preservation and display activities
    - Reformatting labs (both microfilm and imaging)
    - Inventory control and description
- Records & Information Management Services. The Records Management Services unit works with Georgia government agencies (both state and

local) to ensure best-practice records management in government. Specifically, this unit is involved in:

- Operating a records center for the storage of temporary government records and media security vault for the storage of disaster backups of vital and historical records
- Providing training in records management
- Appraising records and promulgating retention schedules
- Leading the digital archives project

The Archives operates two facilities: The Georgia Archives building at 5800 Jonesboro Road, Morrow, Georgia, and the State Records Center building at 1050 Murphy Avenue SE, Atlanta, Georgia. The Archives has a total of 45 staff positions with the majority (38) being based at the Morrow location.

Functional Overview

The functional overview is limited in scope to only those activities relating to the acquisition, care, and description of the holdings of the Archives. In other words, to the functions that will also be present in the Digital Archives. These functions are largely focused within the Archival Services program unit.

- *Records Transfer* — The process of transferring, examining, and accessioning paper records or other media transferred by government agencies for permanent retention.
- *Data Management* — The process of identifying and describing records in the holdings of the Archives in order to create and maintain finding aids and other access tools.
- *Storage* — Preserving records over extended periods of time; in environmentally controlled storage areas, vaults.
- *Management* — The process of managing the overall operation of the vaults, including the management of the monitoring environmental and storage container condition.
- *Access* — Managing public access of records, including the facilitating of finding aids, retrieval of records through ODRA, and monitoring the viewing of records in ODRA.

The objects managed by the Georgia Archives include: paper records, volumes, microfilm (16mm, 35mm, aperture cards, and microfiche), CDs, audio cassettes, video tapes, and motion picture film. These disparate items are controlled through the use of both manual (paper finding aids) and electronic tools (electronic inventories).

Records Transfer

Legal and physical custody of permanent records is transferred to the Archives through the use of a transmittal form. The transmittal form is completed by the agency and submitted to the Archival Services unit as notification that eligible records are ready for transfer to the Archives.

The transmittal form can be submitted electronically by the agency as an Excel spreadsheet or a MS Word template. Information gathered on the form includes:

- Agency, division and program unit title
- Address
- Custodian of records
- Staff member coordinating transfer (usually the Records Management Officer)
- Series title of records
- Date span
- Retention schedule identifying records as permanent
- Shipment list (usually at the container level but can be at folder level)
- Total number of items (containers) in shipment
- Type of container (cubic foot box, volume, etc)
- Accession number (left blank until the records are accepted by the Archives)
- Signature of Archives staff member accepting transfer

Archives staff verifies the correctness of the information on the transmittal form and schedule a pick-up or delivery date for the records. As the records enter the Archives, they are inspected to verify the contents of the shipment, to determine the condition of the records, and to identify processing requirements (re-foldering, re-boxing, and separation of media). The containers are then moved into a predetermined work area – preservation labs, reformatting labs, processing rooms.

Data Management

Once records are acquired through the records transfer process, the Archives must gather information about the records in order to tell others what records we

have, locate the records, and provide access to them. This is done during archival processing.

Processing involves the physical and intellectual work flows that enable the Archives to index and classify records in the Archives descriptive control system. For preservation purposes, records may be re-foldered, re-boxed or repaired during processing. At the same time staff are gathering information on the filing system, subjects included within the records, and key identifiers for the records. Finally, a location number identifying where the container will reside in the Archives vaults is assigned to the record. This information is added to the information initially acquired on the transmittal form – agency, division, unit names; series title; date span; retention schedule; accession number (control number that identifies and links each shipment); and contents list. All of this information is entered into the Archives descriptive and inventory control system – Context by Tower software. As additional records are transferred, the descriptive and inventory control system is updated.

Storage of Records

The Archives currently manages and maintains over 60,000 cubic feet of records in a variety of media (microfilm, audio/video tapes, and paper). This total equates to over 100,000 individual objects. The descriptive and inventory control system of the Archives links the physical location of an object with the indexing terms required for the general public to access the record. (We do not have public access of TRIM right now, the public uses Online Descriptive Inventories and paper versions to request government records and we at the reference desk use TRIM to locate the records). Within the Archives building, there are four vault floors, each with controlled access. Records are stored by container type to maximize the number objects that each floor is able to store. The container type, unique identifying number and location number (identifies vault floor, row, and shelf) are used in combination to distinguish the thousands of objects within the Archives. Vault spaces within the Archives are maintained at optimum temperature and humidity levels to ensure the preservation of the media upon which the records are stored.

Management

Long-term management of the records involves maintaining and monitoring the physical infrastructure around the records. Temperature and humidity are documented and tracked for fluctuations that would over time result in the deterioration of collections. As needed, containers are replaced. In addition, reformatting of the certain collections may be considered as more and more of the Archives holdings are made available electronically.

Access to Records

The Archives fulfills records requests and provides copying services to both the general public and to Georgia government.

The following request and copying services are provided to the general public:

- The Archives is open to the public 5 days a week (Tuesday – Saturday) from 8:30am to 5:00pm. Requests for information may also be submitted via the Archives web site through an email reference request application called Ask an Archivist. Treasures of the Archives (i.e., Royal Charter for the Colony of Georgia) as well as popular collections (i.e., Confederate Pension Applications) are available via searchable databases as digital images.

- Members of the public visiting the Archives are asked to register at the customer service and show a photo id. They are then directed to a security desk where notebooks and other items being carried into the reference areas are searched for contraband (knives, ink pens, food and other items). Lockers are provided to secure items such as purses and briefcases.

- Members of the public have open access to the library stacks and to the reference microfilm collections. If original records are requested, a records request form identifying the record group, series, and box numbers is completed and submitted to the Original Documents Reading Area (ODRA)

- Ordered records are delivered to ODRA within 30 minutes. Five records requests may be submitted at once but only one unit may be used. (the five records requests is up to five boxes from the same series and/or up to five different series with one box or any combination thereof)

- Paper photocopies or microfilm printouts may be ordered. Scanned images of oversized materials may be requested as well. Photocopy requests are usually completed the same day but the Archives reserves the right to fulfill larger orders within a period of working days.

Similar services are provided to government agency staff:

- Government agencies may request records by phone, fax, email or in person. Typically, the agency creator is requesting access to permanent records housed at the Archives. Copies of the records may be requested. Up to twenty-five copies are free.

- Although, closed to the public on Mondays, government agencies requiring access to records may arrange to be provided access. Agency records are not returned to the agency but agency staff may access the originals in the Reference Room and may request copies.